Hydrologic Services

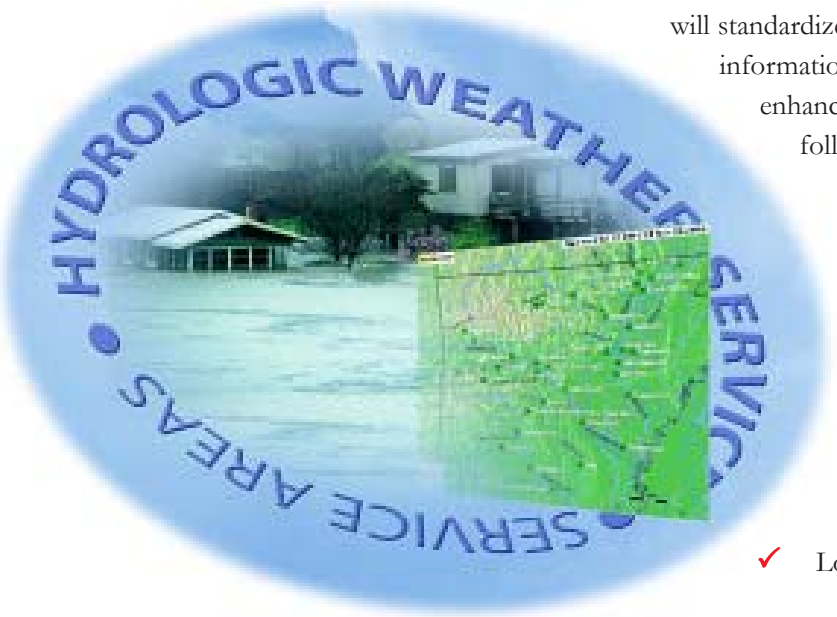
Vision

To provide water information for life's decisions for the protection of life and property and to ensure the Nation's economic well being.

Concept of Operations

The Advanced Hydrologic Prediction Services (AHPS) infuses new science and technology into operations, and is the cornerstone of the NWS Hydrologic Services modernization. AHPS will enable improved river forecasts, flood forecasts, and water information to meet our mission and the changing needs of our partners and customers.

In 2004, NWS plans to implement basic AHPS services at an additional 419 forecast points, bringing the total number to 1,136 forecast locations. In addition, the NWS will standardize access to AHPS products and information through the Internet. These enhancements will facilitate the following:



- ✓ Improved forecast accuracy
- ✓ More specific and timely information on fast rising floods
- ✓ New types of forecast information
- ✓ Longer forecast horizons
- ✓ Products in more user friendly formats, including graphics
- ✓ More timely, consistent products and information
- ✓ Expanded outreach

The AHPS Concept of Services and Operations can be found at **http://www. nws.noaa.gov/om/water/AHPSconcept.pdf.**

Customer and Partner Requirements

As a result of recent interactions with hydrologic customers and partners, the following items have been identified as important needs:

- ✓ Explicit specification of flood and flash flood |watch areas using latitude and longitude pairs.
- ✓ Visually oriented products, including hydrographs, graphical representations of flood watches and warnings, and flood forecast innundation maps.
- ✓ Enhanced (i.e., probabilistic) information to support risk-based decisions.

Link to Science and Technology Infusion Plan

The 10-year goal is to increase the average flash flood warning lead time to 60 minutes for specific portions of counties. For river floods, the 10-year goal is to increase the average warning lead time to 12 hours. These schedules should allow time for orderly evacuation and for emergency managers to take mitigating actions to reduce damage to communities.

Product or Service Change

- ✓ Implement AHPS services at 419 new forecast points.
- ✓ Modify Flash Flood Warning (FFW) product to include latitude and longitude coordinates.
- ✓ Standardize web access to AHPS products.
- ✓ Implement and garner feedback on AHPS experimental graphical products. Product Description Documents (PDD) will be posted on **http://products.weather.gov**.
- ✓ Standardize Flood Watch (FFA) product.

GPRA Performance Measures

Flash floods are the most destructive and lifethreatening type of flooding. These events occur within hours after heavy rainfall and typically provide little time to respond. The Hydrological Services Program's GPRA goals concentrate on increasing advanced warning for these devastating events.

GPRA Performance Measures

Year	FFW Probability of Detection	Lead Time Performance Goal
2004	88 Percent (goal)	48 Minutes (goal)
2003	87 Percent (goal)	47 Minutes (goal)
1999-2002	86.8 Percent (actual)	46.4 Minutes (actual)

Milestones by Quarter

1st Quarter

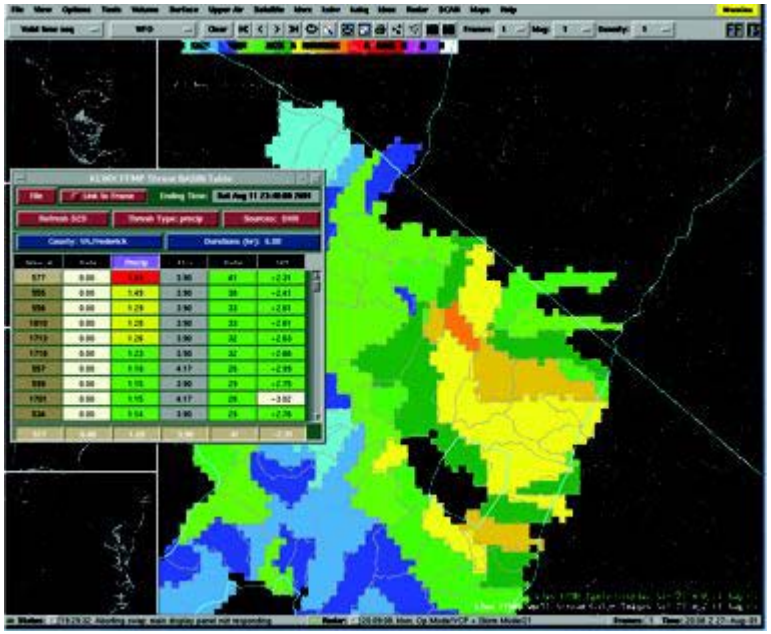
- Develop AHPS requirements documentation for enhancing Flash Flood Services. (Milestone met, 1st quarter)
- Implement web-based AHPS information tool box. (Milestone met, 1st quarter)
- Increase the airborne snow survey flight lines in Alaska by 80. (Milestone met, 1st quarter)

2nd Quarter

- Develop Flood Warning (FLW) verification concept of operations plan. (Milestone met, 2nd quarter)
- Complete annual flood loss summary. (Milestone met, 2nd quarter)
- Provide operational, web-based National Operational Hydrologic Remote Sensing Center (NOHRSC) National Snow Analysis (NSA) products and data sets in map, alphanumeric, and time-series formats for the Eastern U.S. during the winter of 2003-2004. (Milestone met, 2nd quarter)
- Develop a plan for an end-to-end, fully integrated national snow pack monitoring, modeling, and prediction service. (Milestone met, 2nd quarter)

3rd Quarter

- Prepare and update a National Hydrologic Assessment in support of NOAA spring press briefing. (Milestone met, 2nd quarter)
- Develop AHPS requirements documentation to support the implementation of flood inundation mapping. (Milestone met, 3rd quarter)
- Collect airborne gamma radiation snow water equivalent data over Alaska calibrated flight-line network. Provide near real-time airborne snow water equivalent data to Alaska Pacific RFC. (Milestone met, 3rd quarter)



Flash Flood Monitoring and Prediction Radar Map

- Develop user documentation for the AWIPS Operational Build 3 (OB3) hydrologic capabilities. (Milestone met, 3rd quarter)
- Coordinate development and delivery of small basin datasets necessary to utilize the Flash Flood Monitoring and Prediction (FFMP) tool operationally in Alaska and Hawaii. (Milestone met, 3rd quarter)
- Evaluate partner and customer requirements for XML-formatted products and information. (Milestone met, 3rd quarter)

4th Quarter

- Develop formal CSI survey of users of hydrologic information.
- Complete annual National Directives System update of all hydrologic services program policy.
- Develop AHPS requirements documentation to support the implementation of enhanced probabilistic streamflow forecasts.

Integrated Requirements

AWIPS supports hydrologic operations. At WFOs, AWIPS provides tools to monitor and analyze hydrologic conditions, assess the potential for flash floods, and create and disseminate hydrologic forecasts, watches, and warnings. At RFCs, AWIPS provides the infrastructure enabling RFCs to execute hydrologic models and to produce forecasts of future river conditions.

Science and Technology Requirements

In 2004, AWIPS will provide:

- ✓ Enhanced tools to support the WFOs and RFCs in developing point-specific hydrologic forecasts for headwater locations.
- ✓ Enhanced decision making techniques to support the FFW program.
- ✓ Tools to better provide information related to dam failures.

Training

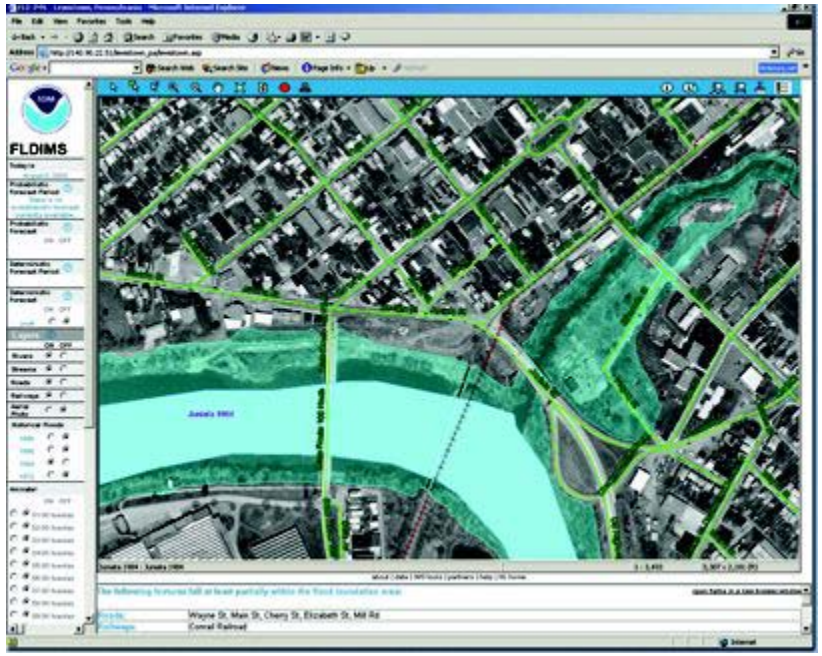
Training requirements for Hydrologic Services can be found at **http://www.nwstc.noaa.gov/nwstrn/d.ntp/pds.html#hyd**. New training initiatives:

- ✓ An Advanced Hydrologic Applications residence course will be offered five times. This course will focus on the enhancements to the hydrologic suite of applications in AWIPS.
- ✓ A Heavy Precipitation/Flash Flood Forecasting workshop will be developed and offered. This workshop will emphasize the FFMP tool, a part of the AWIPS suite of hydrologic applications.
- ✓ New hydrologic science training modules will be developed for hydrologists at the WFOs and RFCs. Hydrologic science training will be conducted as a combination of distance learning and residence courses.

Outreach

The Hydrologic Services will participate in the following outreach activities:

- ✓ Quarterly meetings with the U.S. Geological Survey (USGS)
- ✓ Annual meetings with the National Resources Conservation Service (NRCS)
- ✓ Quarterly meetings with the Advisory Committee on Water Information's Subcommittee on Hydrology
- ✓ NOAA Hurricane Conference
- ✓ Interdepartmental Hurricane Conference
- ✓ Interagency Coordinating Committee on Hurricanes



Real time flood forecast map

- ✓ National Safety Council
- ✓ Association of State Flood Plain Managers (ASFPM)
- ✓ National Hydrologic Warning Council (NHWC)
- ✓ Southwest Association of Alert Users (SAAS)
- ✓ Integrated Flood Observing and Warning System (IFLOWS) Users Group
- ✓ Federal Emergency Regulatory Commission (FERC) Dam Safety Council
- ✓ National Hurricane Conference

Dissemination

Hydrologic Services is actively involved in the VTEC definition, ensuring hydrologic products will meet our customers needs and expectations. Hydrologic Services will also maintain a consistent web presence for the dissemination of new products and services provided by AHPS.

Verification

Verification statistics are generated routinely for FFWs. For the past two years, verification statistics have been generated for RFC river stage forecasts at a subset of forecast points. In 2004, requirements and implementation plans will be developed for verifying the areal and point Flood Warnings issued at WFOs.

Regional Initiatives

In FY 04, NWS Regions will implement basic AHPS services at 419 river forecast points throughout the continental United States and Alaska. The Tar River Basin project in North Carolina encompasses an implementation of the full suite of AHPS capabilities including the provision of flood forecast mapping services at three forecast points. In addition, a consistent delivery of AHPS information will be provided on the Internet by the second quarter of FY 04.

Contact

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